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ABSTRACT

A study was conducted at El Paso Community College (EPCC) to assess the relative ease of access of women to postsecondary education curricula and institutions which train individuals for occupations which have traditionally been performed by men. The study focused on evidence of a lack of gender equality in selected occupations; the characteristics of two- and four-year college students and graduates; the characteristics of two-year vocational degree students and graduates; and the effectiveness of programs to increase the numbers and proportions of women in non-traditional careers. Study findings included the following: (1) high school graduates with the most social and economic resources attend and graduate from four-year, rather than two-year, colleges; (2) nearly 75% of the high-resource high school graduates who went directly to a four-year college graduated within 6 years, while only 33% of the high school graduates who entered a two-year college graduated within 4 years; (3) about half the students in two-year colleges enroll in vocational curricula, with less than half of the entering students graduating; (4) over half of the males who enter a vocational-technical program graduate with an associate's degree within 4 years, though only 13% of the women students finish such a vocational-technical program; and (5) EPCC Women in Technology (WIT) demographics reflect national trends, with women representing the majority of the study body (62%), but a minority of the graduates (47%) and a small minority of those taking vocational-technical courses (15%) and graduating with vocational-technical degrees (11%). (Contains 19 references.) (KP)

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COMPARATIVE SUCCESS IN RECRUITING WOMEN INTO NON-TRADITIONAL OCCUPATIONS: A GREATER EL PASO ANALYSIS

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COMPARATIVE SUCCESS IN RECRUITING WOMEN INTO NON-TRADITIONAL OCCUPATIONS: A GREATER EL PASO ANALYSIS

PROLOGUE

In the 1990's, a proper home is expected to have at least one smoke alarm. Now, a smoke alarm can be evaluated along two quite separate dimensions: (1) Its value can be nested in its capability to be triggered by a fire -- thus being able to alert the inhabitants to an important change in their environment. In other words, its worth can be determined by its **potential** to be used. Said a little differently, not having an alarm, in the event of a fire, can lead to considerable costs which well exceed the initial outlay for the device. (2) A second mode of evaluation of a smoke alarm could be the actual number of times it is triggered and does, in fact, warn the inhabitants, i.e. the more times the device is activated or used, the more valuable it becomes. Conversely, the fewer times it is utilized, the less value: zero use pointing to zero value.

Accordingly, a structural evaluation is available to be made: the worth of an entity is predicated on the importance of opportunities to be exercised as needed. On the other hand, a functional evaluation can be made: the worth of an entity is predicated on the number of times it is actually used. Final judgments would occur based upon the cost/benefit ratio both on the entity's existence as well as its failure to exist plus the actual number of times the entity is effectively utilized.

COMPARATIVE SUCCESS IN RECRUITING WOMEN INTO NON-TRADITIONAL OCCUPATIONS: A GREATER EL PASO ANALYSIS

SUMMARY

An acclaimed value of the 1990's is the equal opportunity for women to enter into and succeed in the occupations of their choice. One avenue of maximizing such options is the facilitation of women's infusion into non-traditional jobs. The WIT program is one catalyst structured to allow women to receive AA degrees in vocational technical curricula previously dominated by men.

Although equal opportunity may be widely supported without reservations, an empirical context may be useful to align expectations, however optimistic, with demographics, however mundane. That is, how rapidly would a WIT-like program be realistically anticipated to increase the proportion of women in non-traditional vocational technical curricula which lead to AA degrees?

The quick answer is: Patience is a virtue. There are four facets useful in the analysis of prospects: (i) Who enters and graduates from two year versus four year institutions? (ii) who enters into and graduates from AA programs? (iii) who graduates with AA degrees in vocational technical programs (which for women are Non-traditional occupations)? (iv) How well does EPCC reflect national trends?

(i) Who enters the two year institutions versus four year institutions (in the 1980s)?

High school graduates with the most social and economic resources enter into and graduate from four -- rather than two -- year institutions. High school graduates with less social and economic resources gravitate toward two year institutions.

Nearly three-quarters of the high resource high school graduates who went directly to a four-year college graduated within six years. Only one-third of the high

school graduates who entered a two year institution graduated within four years. Thus, the odds of any one person, ceteris paribus, not finishing an AA degree program (within four years) is greater than that person finishing the degree program.

(ii) Who enters into a vocational curriculum and graduates with a vocational degree (in the 1980s)?

About half the students in two year institutions enroll in a vocational curriculum. Less than 40% of those who enter the program actually graduate from the program (within four years).

(iii) Who graduates from a vocation technical program -- which is for women -- is Non-traditional (in the 1980's)?

Over half the males who entered a vocational technical program (which would be a Non-traditional occupations for women) graduate with an AA degree within four years. Only one in eight (13%) of the women finished such a vocational technical program. Gender is clearly important. (Note that over 40% of the women enrolled in a vocational business curriculum graduated with an AA degree (within four years)). Ethnicity, too, was pre-potent. Hispanics were least likely to graduate from a vocational technical degree, but most likely to graduate with a vocational business degree.

Framed a little differently, for every 1,000 male high school graduates, 21 or about 2% received a vocational technical degree. For every 1,000 female high graduate, 13 or about 1% received a vocational technical degree. It seems apparent that vocational technical degrees are not viewed by the U. S. mainstream as an attractive life-style choice.

(iv) How well does EPCC parallel national trends?

The demographics of EPCC WIT program reflect the national trends very well. There is no evidence that EPCC represents any particularly unique pattern of women entering into and remaining in a non-traditional, technical, vocational degree program.

Of note, a longitudinal study of high school students indicated that the percentage of women who were actually employed in vocational technical types of occupations exceeded the percentage who aspired to such occupations. Hence, whatever barriers were extant, they were not unsurmountable. Accordingly, optimism for opening opportunities for women into some Non-traditional occupations may be tempered by the realities of people making choices, one at a time, to maximize their life-chances in an information, service driven society.

TABLE OF CONTENTS

PAGE

Prologue ..... -

Table of contents ..... -

Introduction 1

I Gender equality of the work force..... 2

IIa Who enrolls in a four-year college or university?.... 4

IIb Who graduates from a four-year college or university? 8

IIIa Who attends a two-year institution? 11

IIIb Who graduates with a degree or certificate from a two year institution? ..... 13.

IIIc Who enters vocational curricula in two-year institutions? 16

IIId Who graduates from a two-year vocational curriculum? 18

IIIe Who graduates with a vocational degree in technical, industrial, or engineering trades: VO-TECH degree?. 20

IV Women of EPCC in the VO-TECH program 24

V Inertia from high school on postsecondary education graduation 26

VI Programs to increase women's participation in non-traditional occupations: tactical or analytical strategems..... 29

Footnotes 36

Appendix I..... 37

References 38

COMPARATIVE SUCCESS IN RECRUITING WOMEN INTO NON-TRADITIONAL OCCUPATIONS: A GREATER EL PASO ANALYSIS

INTRODUCTION

Within the last quarter century -- both within the U.S. and across the planet's community of countries -- a number of social dynamics have emerged and impacted on the daily lives of the citizens. Two such dynamics, not unrelated, are germane to this paper: (1) the lowering of birth rates, i.e. the mean number of births per woman, and (2) the influx of women into the market economy of paid labor. As women have increased their representation in the labor force, the increase has not been evenly distributed across the various occupations. Some occupations, e.g. elementary school teacher, have high proportions of women. Other occupations, e.g. airline pilot, have low proportions of women.

It is the goal of this paper to focus on the relative access of women to postsecondary education curricula/institutions which train individuals for occupations which, in the past, had normally been performed by men: non-traditional occupations for women. Of particular interest is the comparative success of EL PASO COMMUNITY COLLEGE in offering women opportunities to enter non-traditional occupations within the context of complementary U.S. institutions of higher education.

This paper is organized in the following manner. (I) Evidence of a lack of gender equality in selected occupations will be presented.

(IIa) Who goes to four year colleges & universities?

(IIb) Who graduates from four year colleges & universities? These postsecondary institutions are complementary to EPCC and serve separate functions, and, as will be argued, serve separate populations.

(IIIa) Who goes to two-year institutions?

(IIIb) Who graduates from two-year institutions?

(IIIc) More specifically, who enrolls in vocational degree programs?

(IIId) Who graduates from vocational degree programs?

(IIIe) Even more specifically, who enrolls in technical, construction, industrial, & trade vocational curricula (henceforth: VO-TECH).

(IIIf) Who graduates from VO-TECH programs?

(IV) The results of the national data will be compared to the EPCC WOMEN IN TECHNOLOGY (**WIT**) program. WIT is a program instituted to facilitate the easy transfer of women who wish to have a VO-TECH career.

(V) Then the relative ability of a/any postsecondary institution to control enrollment, retention, attrition, and graduation will be discussed.

(VI) Finally, the efficacy and strategies of (women's) programs to increase the numbers or proportions of women into non-traditional careers will be examined.

(I) Gender equality in our labor force.

That there is a lack of gender equality in the labor force is without argument. The numbers are clear and obvious. See Table 1. What is less clear and is less obvious is how the disparity occurs and how the disparity could be ameliorated.

TABLE 1

Women in selected traditonal and Nontraditional jobs: United States 1990 (U.S. Dept. of Labor 1990).

NONTRADITIONAL OCCUPATIONS		TRADITIONAL OCCUPATIONS	
Occupation	Women as % of total	Occupation	Women as % of total
Architects	18.4%	Librarians	83.3%
Engineers	8.0%	Registered Nurses	94.5%
Police & Detectives	12.1%	Elementary teachers	85.2%
Telephone installers	11.3%	Administrative support	79.8%
Sales reps./commodities	22.0%	Secretaries	99.0%
Precision production, craft & repair	8.5%	Bookkeepers	92.2%
		File Clerks	83.8%
Mail carriers/postal service	24.9%	Health technicians & technologists	83.5%
Brick & stone masons	0.2%	Bank tellers	90.4%
Carpenters	1.3%	Waitresses	80.8%
Electricians	1.7%	Hairdressers	89.8%
Machinists	3.9%	Sewing machine operators	89.1%
Auto mechanics	0.8%	Speech therapists	83.1%
Data processing equipment repairs	11.4%	Dental hygienists	99.1%
		Food counter/ fountain workers	72.7%
Aircraft engine repairs	2.8%	Child care workers	97.0%
Plumbers, pipefitters & steamfitters	0.9%	Legal assistants	78.8%
Airplane pilots	5.1%		
Drafters	18.9%		

(II) Four year colleges & universities.

Given that the major conduit to job selection and preparation is postsecondary education, the demographics of postsecondary student bodies will be examined next. Four groups of high school students are germane to this paper: (1) students who enrolled in a four year college or university directly after college (about 29% of high school graduates); (2) high school graduates who delayed entry into a four year college or university, but did enter such an institution within six years after their high school graduation or attended a two year institution directly after high school and transfered to a four year institution (38% of the high school graduates); (3) Students who entered two-year institutions directly after high school graduation (28% of the high school graduates) [Note: Some of these students would be the same individuals in (#2) Students who delayed entry into a four year institution, but did transfer to a four year institution]; and (4) High school graduates who did not enroll in any postsecondary institution within six years of graduation (33%) by the graduates. Those students who did not graduate from high school will be addressed in a subsequent session. The following section will follow a cohort of high school graduates who went to a four year college or university.

(IIa) WHO ENROLLS IN A FOUR YEAR COLLEGE OR UNIVERSITY?

Direct enrollment from high school

For each 1000 high school graduates, 290 entered a four year institution directly from high school (U.S. Dept. of Education 1989a).

See Table 2.

Gender: Females (30.2%) were only marginally more likely to enroll than were males (27.6%).

Ethnicity: Asian-Americans (44.4%) were most likely to enroll, followed by Whites (30.4%), Blacks (26.6%), and finally Hispanics (15.5%).

Note that Asian-Americans were nearly three times more likely to enroll than were Hispanics.

Socioeconomic Status(SES): The highest SES quartile (52.8%) was over 3.5 times more likely to enter a four year institution than was the lowest quartile (14.6%).

Aspirations: Student educational aspirations were the most predictive of enrollment. Of those high school graduates who aspired to an advanced degree, 66.2% directly entered a four year institution. For those graduates who aspired to a bachelors degree, 54.9% directly enrolled into a four year institution. There was then a sharp drop-off when the aspiration was "Some College" (14.0%) or for "Vocational training" (2.8%) and "no aspiration" (1.0%).

Type of Institution. By a two to one differential, more students went to a public school (65.7%) than to a private school (34.3%). The demographics between the public and the private school students were more marked by their similarities than by their differences.

TABLE 2.

Rates at which selected subgroups of 1980 high school graduates followed different tracks after graduation (in percentages).

Group	Enrolled in no postsecondary institution	Delayed entry into a four year institution/ enrolled in a two-year institution	Enrolled directly in a four year institution
Total	32.7%	38.3%	28.9%
Gender			
Male	35.7%	36.7%	27.6%
Female	29.8%	39.9%	30.2%
Ethnicity			
White	31.4%	38.2%	30.4%
Black	36.4%	36.9%	26.6%
Hispanic	41.4%	43.2%	15.5%
Asian-American	9.7%	45.8%	44.4%
Socioeconomic status			
Lowest quartile	48.3%	37.0%	14.6%
Highest quartile	11.2%	35.9%	52.8%
Educational aspirations			
None	75.8%	23.2%	1.0%
Vocational	46.2%	51.0%	2.8%
Some college	26.5%	59.4%	14.0%
Bachelor's degree	8.7%	36.5%	54.9%
Advanced degree	5.2%	28.5%	66.2%

Delayed enrollment from high school or enrolled directly in a two-year institution.

For each 1000 high school graduates, 383 (38.3%) delayed their enrollment into a four year college or university or enrolled directly into a two-year institution. See Table 2. [Note how these students more resemble the "Never enrolled" student, in terms of demographics, than they resemble the demographics of the "Direct enrollment " student].

Gender: Again, females (39.9%) were slightly more likely than the male (36.7%) to enter the four year college or university.

Ethnicity: Unlike the "direct enrollment" students, ethnicity was not a predictive marker. All four surveyed ethnic groups were within 7% of each other.

Socioeconomic Status (SES). The highest quartile SES (35.9%) was virtually the same as the lowest quartile SES (37.0%). Again, this pattern is unlike the profile of the "direct enrollment" student.

Aspirations. Of those students whose aspirations were "Some college", 59.4% delayed their enrollment. Of those whose aspirations were vocational training, 51.0% delayed their enrollment. Again, note how the delayed entry individuals more resemble the student who "Never enrolled/entered a two-year institution" versus those who directly enrolled in a four year college or university.

(IIb) WHO GRADUATES FROM A FOUR YEAR COLLEGE OR UNIVERSITY?

For each 1000 high school graduates, 189 students (18.9%) graduated within six years of enrollment with a bachelor's degree. The majority of the 189 graduates (61.4%) were those who entered school right after high school. The remaining of the graduates either started college after high school at some time within the six year interval (19.0% of the bachelors') or started college, dropped out, and then re-entered (19.6% of the bachelors'). See Table 3.

Gender: Males and females are about equally likely to graduate.

Ethnicity (and timing): As Table 3 indicates, there were large differences in graduation rates by ethnicity and by timing of their college career.

The highest percentage of graduates was Whites who went directly from high school to college and stayed there (76.2%). This high is contrasted to the lowest percentage wherein only 4.3% of the Hispanics graduated who delayed entry into college. This gap (76.2% versus 4.3%) indicates that this cohort of Whites is over 17 times more likely to graduate than this cohort of Hispanics.

Socioeconomic Status (and timing). Again, the student's SES was important, especially when aligned with the timing of the college career. The most likely student to graduate (78.2%) is the one who is in the highest quartile SES and who enrolled in college directly from high school and stayed there. The least likely student to graduate (3.8%) is the one in the lowest SES quartile and who either delayed entry into a four year school

or went to a two-year school. Hence, this High SES cohort had in excess of a 20 fold greater chance to graduate when compared to this cohort of lowest SES students.

Type of institution. (For direct enrollment students only). Private institutions had a slightly higher rate of graduates (78.5%) than did the public institutions (71.0%).

SYNOPSIS: All students who graduated from high school clearly do not have an equal chance to graduate from a four year college or university. Ethnicity and SES affect the academic life chances of high school students in a salient way.

TABLE 3.

Rates of bachelor's degree attainment within six years of graduation for 1980 high school graduates by time of enrollment (in percentages)

Subgroup	Delayed enrollment/ enrolled in a two-year institution	Directly enrolled; dropped out (re-enrolled)	Directly enrolled; continuous enrollment
Total	9.3%	28.0%	73.7%
Gender			
Male	11.3%	28.2%	70.3
Female	7.6%	27.9%	76.9%
Ethnicity			
White	10.3%	31.2%	76.2%
Black	5.2%	31.6%	52.7%
Hispanic	4.3%	15.5%	55.6%
Asian-American	15.0%	21.2%	68.2%
Socioeconomic status			
Lowest quartile	3.8%	16.9%	64.6%
Highest quartile	19.4%	34.9%	78.2%
Type of college			
Public four-year	n.a.	24.5%	71.0%
Private four-year	n.a.	35.5%	78.5%

(IIIa) WHO ATTENDS A TWO YEAR INSTITUTION?

The following data are from the 1980 High School graduates survey (U.S. Dept. of Education 1989a,b).

For a comparison with 1972 graduates,see Appendix I.

Approximately 28% of the high school graduates went directly from high school to a two year institution. This sub-group seems to have the greater chance of completing a degree program rather than those who delayed entry. See Table 4.

Gender: Females (30%) attended a two-year institution at a marginally higher rate than did males (26%).

Ethnicity: 41% of the Hispanics, who attended postsecondary institutions immediately after high school graduation, went to a two-year institution. The comparable figures for Whites was 28% and for Blacks was 14%. Thus, Hispanics were almost three times more likely to attend a two-year institution than were Blacks.

Parent's education: The educational level of the students' parents was not predictive of enrollment rates. See Table 4. The high percentage was 34% for "Some college for parents" and the low was 30% for "Parents have a BA or higher".

Socioeconomic Status (SES): Differences in SES did <u>not</u> lead to large differences in enrollment rates. 20% of High SES attended the two-year schools versus 32% enrollment at Medium and 33% enrollment at Low SES. This similarity in percentages is in stark contrast to the four year college enrollment rate differentials aligned with differences in SES.

TABLE 4.

Percentage of high school graduates pursuing postsecondary education who entered two-year institutions immediately after high school (1980).

Student characteristic	Percentage of subgroup:
Total	28%
Gender	
Male	26%
Female	30%
Ethnicity	
Black	14%
Hispanic	41%
White	28%
Parents' education	
Some high school	31%
High school graduate	32%
Some college	34%
BA or higher	30%
Socioeconomic Status (SES)	
Low	33%
Medium	32%
High	20%

(IIIb) WHO GRADUATES WITH A DEGREE OR CERTIFICATE FROM A TWO-YEAR INSTITUTION?

Within four years after entering a two-year institution, 34% of those who enrolled received a degree or certificate from that two-year institution.[1] That is, for each 1000 High school graduates, 95 earned some type of award (28% enrolled x 34% were awarded = 9.5%). See Table 5.

Gender: Female graduates (38%) outnumbered male (28%) graduates.

Ethnicity: 36% of the Whites and 36% of the Hispanics received a degree or certificate. The Black percentage was lower at 23%.

Parents' education. The parents' education was not predictive. The low percentage was 32% ("Parents have a BA or higher" and "Some high school") to a high percentage of 39% ("Parents finished high school").

Socioeconomic Status (SES) Again, quite distinct from the four year college profile, SES was not strongly related to graduation rates. The rates from Low SES (36%), Medium SES (35%), and High SES (31%) were all within five percentage points of each other. Why SES is not related to graduation rates (but is in the four year institutions) is beyond the scope of this paper. Different populations is one possible explanation. The effectiveness of grants,e.g. Federal Pell grants, is another possible explanation.

[Note: Of interest is the pattern wherein the percentage of high school graduates who received a BA within four years after

graduation (1972) from high school (22.5%) was **greater** than the percentage of high school graduates who received an AA within the same four year interval (6.4%). The same pattern occurred for 1980 graduates: recipients of BA (17.8%) versus AAs (8.0%) (U.S. Dept. of Education 1989b)].

TABLE 5.

Percentage of students entering two-year institutions who completed a certificate or degree program (within four years).

Subgroup	Percentage
Total	34%
Gender	
Male	28%
Female	38%
Ethnicity	
Black	23%
Hispanic	36%
White	36%
Parents' education	
Some high schoool	32%
High school	39%
Some college	33%
BA or higher	32%
Socioeconomic Status	
Low	36%
Medium	35%
High	31%

(IIIc) WHO ENTERS VOCATIONAL CURRICULA IN TWO-YEAR INSTITUTION?

Of all the students who entered a two-year institution, 56% were enrolled in a vocational curriculum. See Table 6.

Gender: Of the females in two-year institutions, 63% were in vocational curricula which was marginally higher than the 47% of the males who were in vocational curricula.

Ethnicity: Ethnicity was not a good predictive index: the percentages of enrollment in vocational curricula were similar across ethnic lines: Whites (57%), Hispanic (57%), and Black (51%).

Parents' education. Parents' education was of minor importance in terms of who entered a vocational curriculum. The students whose parents had "no college" (no high school degree" (66%) and "High school degree" (67%)] had a slightly higher tendency to enter a vocational curriculum than those students whose parents had "Some college" (56%) or had a "Bachelor's degree or more" (44%).

Socioeconomic Status (SES). Here, too, SES had some predictive power wherein the Low SES student (66%) was more likely to enroll in a vocational curriculum than a High SES student (42%) The Medium SES student was intermediate at 58%.

TABLE 6.

Percentage of vocational students among those who entered a two-year institution (1980)

Sub-group	Percentage
Total	56%
Gender	
Male	47%
Female	63%
Ethnicity	
Black	51%
Hispanic	57%
White	57%
Parents' education	
Some high school	66%
High school	67%
Some college	56%
BA or higher	44%
Socioeconomic Status	
Low	66%
Medium	58%
High	42%

(IIId) WHO GRADUATES FROM A TWO-YEAR VOCATIONAL CURRICULUM?

Overall, 38% of those individuals who entered a two-year vocational curriculum received a degree within four years. Or, presented differently, for every 1000 high school graduates, 60 graduated with a vocational degree (28% enrolled in a two-year institution x 56% enrolled in a vocational curriculum x 38% earned a degree = 6%). See Table 7.

Gender: Females graduated from a vocational curriculum at a slightly higher rate (42%) than did males (31%).

Ethnicity: Hispanics graduated at a rate (43%) almost twice as high as Blacks (23%). Whites were intermediate at 39%.

Parents' education: With the exception of "Parents had no high school degree" (a low of 30% graduation rates), there was little predictability from the students' parents' educational level (a range of 41% for the student's whose parents completed high school to 37% for students whose parents had some college).

Socioeconomic Status (SES). SES was not predictive of graduation rates: High SES graduated at a 35% rate, Low SES at 38%, and Medium at 39%.

TABLE 7.

Percentage of vocational students who completed a certificate or degree.

Student characteristic	Percentage
Total	38%
Gender	
Male	31%
Female	42%
Ethnicity	
Black	23%
Hispanic	43%
White	39%
Parent's education	
Less than a high school degree	30%
High school degree	41%
Some college	37%
BA or higher	38%
Socioeconomic Status	
Low	38%
Medium	39%
High	35%

(IIIe) WHO GRADUATES WITH A VOCATIONAL DEGREE IN TECHNICAL, INDUSTRIAL, OR ENGINEERING TRADES: VO-TECH DEGREE?

To help develop an additional context, degree recipients in VO-TECH will be compared to degree recipients of vocational degrees in business.

Gender: For females, 13% of their degrees were in VO-TECH. For males, 55% of their degrees were in VO-TECH. Males were over four times more likely than females to receive a degree in VO-TECH.

In contrast, 43% of the degrees for females were in business versus 22% for males. Females received business degrees at a rate nearly twice as often as males.

Ethnicity: Ethnicity made a difference. Hispanics had 17% of their degrees in VO-TECH which was lower than for Blacks (27%) and for Whites (30.5%). Whites were about 40% more likely to receive a degree in VO-TECH than were Hispanics.

Again, as a contrast to VO-TECH, 47% of the degrees for Hispanics were in business which was more than for Whites (33%). The Black percentage was intermediate at 45%.

Parents' education: Parents' education was not predictive. Students whose parents had a "High school or less" level of education had 27% of their degrees in VO-TECH. For those students whose parents had some college or more, 30% of their degrees were in VO-TECH.

However, for business degrees, parents' education did reveal a small difference. Students whose parents had "High school

or less" received 43.5% of their degrees in business. For those students whose parents had "Some college or beyond", 31% of their degrees were in business.

Socioeconomic Status (SES). SES was not predictive of reception of VO-TECH degrees. Low SES students received 32% of their degrees in VO-TECH. High SES students received 28% of their degrees in VO-TECH.

SES was also not predictive of business degrees. Low SES students received 34% of their degrees in business. High SES received 36% of their degrees in business.

SYNOPSIS: Males. For every 1000 male high school graduates, 260 (26%) entered a two-year institution.
Of these 260, 122 (47%) enrolled in a vocational curriculum.
Of these 122, 38 (31%) received a vocational degree.
Of these 38, 21 (55%) received a VO-TECH.
That is, of the 1000 male high school graduates,
21 or 2% received a VO-TECH degree.
Females. For every 1000 female high school graduates, 300 (30%) enrolled in a two-year institution.
Of these 300, 189 (63%) enrolled in a vocational degree curriculum.
Of these 189, 79 (42%) received a vocational degree.
Of these 79, 10 (13%) received a VO-TECH degree.
That is, of 1000 female graduates from high school, 13 or 1% received a VO-TECH degree.

Although neither parental education nor SES was very

influential in determining who would receive a VO-TECH degree, ethnicity was important. Whites were 40% more likely to receive a VO-TECH degree than were Hispanics. Blacks were intermediate.

[Note: Comparable percentages for those individuals receiving "vocational certificates" rather than a "VO-TECH degree" were 75% for males and 16% for females. In other words, males were in excess of 4.5 times more likely to receive their "VO-TECH certificate" than were the females.]

TABLE 8.

Percentage distribution of area of study for 1980 high school graduates who completed a vocational AA degree within four years of enrollment by selected student characteristics (U.S. Dept. of Education 1989b).

Student characteristic	Area of Study:	
	VO-TECH	Business
Total	29.8%	34.6%
Gender		
Male	55.2%	22.3%
Female	13.0%	42.8%
Ethnicity		
Hispanic	17.1%	47.4%
Black	26.7%	44.6%
White	30.5%	33.3%
Parents' education		
Some high school	23.8%	42.5%
High school	29.3%	44.5%
Some college	34.0%	24.9%
BA degree or higher	25.7%	37.5%
Socioenonomic Status		
Lowest quartile	32.1%	33.8%
Second quartile	23.7%	38.0%
Third quartile	33.3%	32.4%
Highest quartile	27.8%	36.1%

(IV) WOMEN OF EPCC IN THE VO-TECH PROGRAM

EPCC is a public two-year college which grants VO-TECH AA degrees within its overall AA program. The school population has been growing fairly steadily, as had El Paso itself. In 1992, EPCC had over 18,000 students. See Table 9. The school is predominately female, and the majority of the students are Hispanic (and increasingly so).

In 1992, females received only 47% of the AA degrees. Males received a majority of the degrees (53%), but were a minority of the students (38%). Such a male majority is aberrant from the larger U.S. context (see Table 5) wherein males were only three-quarters as likely to graduate as females were (28% ÷ 38% = 74%).

Only 4% (765 students) of the EPCC student body were taking a VO-TECH course in 1992. Of these 4%, only about one-sixth (15% or 114 students), were female.

VO-TECH degrees represented only 7% of all degrees granted (62 of 858) [89% male; 11% female]. Again, as was noted earlier, VO-TECH degrees are not a popular career option.

Were someone to sculpt a category wherein low number of graduates (and low probability of graduation would be expected), then the category of "Hispanic-females-in-a-two-year-VO-TECH-degree-program" would be an excellent candidate. EPCC, as an institution, exemplifies this pattern.

TABLE 9.

Demographics of the EPCC student body: 1992.

Demographic	Number	Percent	Percent change from 1988
Population of EPCC student body	18,473		+21%
% Male		38%	+11.5%
% Female		62%	+27%
Number of AA degrees	858		-9%[a]
% Male		53%	-13%[a]
% Female		47%	-5%[a]
Number of students in VO-TECH	765		
% Male		85%	
% Female		15%	
Number of students receiving a VO-TECH degree	62		
% Male		89%	
% Female		11%	
Percentage of all degrees given which were VO-TECH degrees		7%	
% Male		89%	
% Female		11%	

[a] 1989

(V). INERTIA FROM HIGH SCHOOL ON POSTSECONDARY EDUCATION GRADUATION

Three trends seem germane. (1) for those high school students with more discretionary choices (i.e. better SAT scores, better grades, and more access to resources), they tend to go to a four year school (Adelman 1991, Finn 1993, Jencks 1972, 1979). Those high school graduates with fewer options (i.e. lower SATs, lower grades, and less access to resources), more tend to attend two year institutions (Adelman 1991, Finn 1993, Jencks 1972, 1979). (2) Of those males who enter a two-year vocational degree program, only 17% receive a VO-TECH degree. Of those females who enter a two-year vocation degree program, only 5% receive a VO-TECH degree. VO-TECH degrees are not intensely pursued by large numbers of people. (3) Even though a small percentage of males receives a VO-TECH degree, the percentage of females is even smaller. The next section will examine high school students and what characteristics that they possess to help explain these traits.

Throughout the discussion, it may be useful to keep in mind a basic premise of the U.S. public school system: individuals have a great discretion on their own choices of curricula and careers. Neither coercion nor mandates nor negative sanctions are (officially) in place to pressure students into one "track" versus another: the freedom of the individual's choice is pre-eminent.

High school characteristics

The National Longitudinal Student survey of high school students (Adelman 1991) asked the students at age 19 years what their occupational aspirations were. At age 32 years, the former students were re-surveyed to learn what their actual occupations had become. See Table 10.

Note that, for males,10.5% at age 19 years aspired to be craftsmen/operatives (analogous to VO-TECH). At age 32 yars, 18% of the males were employed as craftsmen/operatives. For the males at 19 years, craftsmen/operatives was the third most popular occupation aspiration: well behind Professional (46%) and Managers (17%). Hence, the degrees offered in a VO-TECH curriculum are not viewed as prefered occupations by graduating high school male seniors.

Females were even less interested in those occupations as graduating seniors. See Table 10. Only 1% of the females aspired to be craftsmen/operatives behind Professional(42%), school teacher(17%), homemaker (14%), clerical (13.5%), Managers (5%). However, at 32 years, 3% of the women were employed as craftsmen/operatives: a tripling of aspiration levels.

Accordingly, as children are growing toward adulthood, their worldview, however forged, would include two facets: (1) a four year degree is preferable to a two-year degree and "hands-on" VO-TECH types of occupations are not idealized careers.

TABLE 10.

Occupational aspirations at age 19 years versus actual occupations at age 32 years (in percentages).

Occupation	Men		Women	
	Planned	Actual	Planned	Actual
Craftspersons & operatives	10.5%	17.7%	1.1%	3.4%
Clerical	0.9%	5.5%	13.5%	21.2%
Laborers	1.4%	2.6%	<0.1%	1.5%
Homemakers	0.0%	3.5%	13.7%	15.5%
Managers & proprietors	16.9%	20.1%	4.9%	10.1%
Professional	46.2%	25.6%	42.3%	22.1%
Merchant	1.8%	6.8%	0.8%	3.4%
Schoolteachers	6.6%	3.2%	16.7%	9.8%
Other	15.7%	14.7%	7.0%	12.0%

High School Students At Risk

Finn's (1993) survey was designed and executed to isolate factors which put a student at risk of not doing well in school. The survey found that there was a gender differential: males were more at risk than females (29% to 17%). The survey also found ethnic differences: Asian-Americans were least at risk (12%) and Hispanics were most at risk (34%). Whites (21%) and Blacks (27.5%) were intermediate. Hispanics were over 2.5 times more a risk than Asian-Americans.

Accordingly, there are strong forces which act upon children and teenagers which bias their choice of schools and choice of majors and their chances of graduating. These forces, which include family background, gender, ethnicity, are totally immune from any school's programs.

Astin (1993) estimates that most of the differences (technically, variance) in retention rates in four year schools is due to differences in the characteristics of students who enroll -- a "student effect" -- rather than to institutional policies or characteristics -- an "institutional effect". Astin argued that (in order of importance) average high school grades, SAT score (math and verbal), gender, and ethnicity all are predictive of student retention/graduation. "Female" and "White" indicate greater retention. "Male" and "Black" and "Hispanic" indicate lesser retention. It is useful to note that, across ethnic lines and across SES levels, female high school students graduated at a higher rank than did male students (Adelman 1991). That

is, their cognitive abilities, as evaluated by high school testing instruments, were higher, on average, than their male counterparts. All of these factors are totally immune from postsecondary institutions' programs.

(VI) PROGRAMS TO INCREASE WOMEN'S PARTICIPATION IN NON-TRADITIONAL OCCUPATIONS: TACTICAL OR ANALYTICAL STRATEGEMS.

If a goal is to increase female participation in VO-TECH occupations, then it seems useful to survey other programs around the country to find which ones are more effective and which ones are less effective. Around the country, a large number of such programs have been instituted whose function is to increase the number and proportions of women in non-traditional occupations.

A review of these programs suggests two patterns. (1) The increase in women's ingress has been very uneven. Some occupations have seen large increases, e.g. pharmacy and bartenders. Others have been very resistent to ingress, e.g. engineer and plumber. (2) As the level of post-secondary education degrees escalates (i.e. from BA to MA to Ph.D.), the percentages of females, compared to men, holding those degrees decrease. See Table 11.

In the context of these two trends, the questions become: "What works, and what does not work? What are the factors which have facilitated women in large numbers and proportions into some non-traditional occupations, and what are the factors which have inhibited women from increasing their representation in other non-traditional occupations?

TABLE 11.

Percent of Bachelor's , Master's, and Doctoral Degrees Awarded to Women in Selected, 1982-1983 (Ehrhart & Sandler 1987).

Field	Degree:		
	Bachelor's	Master's	Doctor's
All fields	50.5%	50.0%	33.1%
Agricultural Sciences	39.4%	29.4%	13.9%
Business and Management	41.1%	28.8%	16.8%
Computer & information Sciences	36.3%	28.3%	12.9%
Education	75.8%	72.6%	50.1%
Engineering	13.2%	9.2%	4.4%
Foreign Languages	74.3%	65.6%	56.9%
Health	83.6%	74.2%	43.6%
Home Economics	94.9%	91.0%	68.4%
Law	58.4%	23.3%	23.2%
Life sciences	46.0%	43.5%	32.1%
Mathematics	43.8%	34.5%	16.6%
Physical sciences	27.3%	21.4%	14.0%
Psychology	67.5%	61.3%	47.8%
Social sciences	44.5%	37.7%	30.3%

The conventional wisdom in much of the literature on the low percentage of women in non-traditional occupations focuses on parameters of the male dominated workplace which discourages the presence of women. The general tenor & tone of the various authors is that male attitudes tend to be non-encouraging and that these negative attitudes are effectively inhibitory. A question then emerges which is quite independent of the accuracy of this focus: How can those parameters be recognized and remediated?

A review of the literature reveals in interesting pattern. Numerous publications refer to programs to enhance women's participation in male dominated jobs. These programs include support groups, consciousness raising sessions, logistic support, and courses honed to increase the relevant woman's confidence and abilities in relationship to her chosen career option (e.g. Bayne & Gerber 1990, Eliason 1981, Fadale, et al. 1980, Wingate 1992).

However, studies which analyze the relative **effectiveness** of one program versus another is virtually the null set. For example, when a flagship organization to recruit women in non-traditional occupations -- the Women's Policy Center -- was contacted for information concerning which type of program is more/less successful in recruiting women, their response was a citation of a publication which, in turn, had 180 recommendations to maximize women's participation in non-traditional careers.[3] Yet no attempt was made in the publication to evaluate the relative effectiveness of any of the recommendations. They were proffered as good ideas, and well they may be. Nevertheless,

a strategy of making unsubstantiated suggestions would not exemplify a hallmark of Western empiricism.

A second gap in the literature is the conflict or lack of compatability between the mother-role and career advancement. For example, fully half of the women listed in Who's Who were childless (Mackey & Coney 1986). Far more female engineers were childless than male engineers (Jagacenski 1987). Women with children earn less income than do women without children (Adelman 1991). Much of the literature on gender equity simply deletes reference to the putative conflict,(Reskin & Roos 1990, Houser and Garvey (1985). The deletion from discussion, however, will not serve to solve that problem.

Accordingly, it is suggested here that policy makers have adopted a generalized approach to further the goals of creating a more equitable labor market and labor force. This strategic approach emphasizes the tactic of stressing the value of expanded opportunities for women. What has been de-emphasized is the analytical approach of what specifics are aligned with increased proportions of women in non-traditional jobs and of what specifics are aligned with static proportions of women in non-traditional jobs. That is, "frequencies" have been de-prioritized while structural "opportunity" has been prioritized.

Two premises that are not congenial to most if not all of the programs for gender equity and, hence, rarely discussed or introduced into the marketplace of ideas include:
(1) Women will make faster in-roads into male-dominated jobs when the attraction of the job to men is decreased. That is,

if the "demand" for a particular occupation becomes de-valued for men, then the "supply" of men seeking these occupational slots decreases. Women, therefore, have an easier access, with less competition for those slots. Psychology, pharmacy, and bartending are offered as three such examples. See Reskin & Roos (1990) for other examples.

(2) Women will make slower in-roads into non-traditional jobs that women,as a class, are not interested in performing. For example, the seminal survey of Israeli kibbutzim by Tiger & Shepher (1975) suggested rather convincingly that women, as a class, are more interested than men, as a class, in jobs that involve working with people. Conversely, compared to women, as a class, men, again as a class, are more interested in "energy transfer" jobs that do not necessarily interrelate with people.

The relevant literature is quite reticent in entertaining the notion that endogenous factors may bias men and women to find distinct comfort zones by doing different tasks for different reasons. Well documented gender differences in neural, hormonal, and anatomical functionings certainly allow for gender dimorphic motivational systems.

Thus, static numbers and proportions of women in selected male dominated occupations might well be expected. Yet such stasis might not be cause of an evaluation that gender equity programs are not effective, even if the barometer were the (fewer) women who do avail themselves of the opportunity. There are

additional pathways or criteria for success than a monotonic relationship between effort expended and resultant frequencies. For example, (1) given the potential of a continuum of desirability of women for various male dominated occupations, if there exists an infrastructure of opportunity for women to ingress into the least desirable jobs, then such an infrastructure might facilitate the felt ease by those women to enter the **moderately** desirable job. That is, these women may feel less like they are on the cutting edge of radicalism, but are more mainstream and conventional. Buffers are always useful.

(2) More importantly, the value of the concept of "opportunity" is perhaps not best evaluated with frequencies. The U.S. social fabric is predicated on the dual notions of "equal opportunity" and the "freedom of the individual". It is difficult to devise a cost/benefit ratio to calibrate the worth of individual freedom. Similarly, a cost/benefit ratio to evaluate the value of opportunity may be equally difficult to construct.

FOOTNOTES

[1] Proprietary (for profit) two-year schools represent only 8% of the total number of AA degrees conferred in 1989-90. Consequently, their numbers were too small for meaningful comparisons with public institutions. (U.S. Dept. of Education 1992).

[2] By definition, those individuals who fail to graduate from high school are more disengaged from school than those individuals who do graduate. As will be discussed in the next section, "disengagement" is a fairly good predictor of an at-risk student (Astin 1993). Thus, to the extent EPCC enrolls individuals without a high school degree or a G.E.D., the lower the percentage of those who enroll would be expected to graduate.

It would be disengenuous, even if more delicate, to avoid the putative lack of consonance which occasionally can exist between a/any Institution and student goals. Suffice it to say that, if extending a student's benefit package outweighs the costs of being <u>not</u> enrolled, then the student has an incentive to maintain enrollment without internal pressures to graduate with alacrity.

[3] A survey of ten two-year colleges in Texas failed to elicit responses in eight of them -- even the return of a SAS-receipt postcard. Two institutions did return the receipt post card. One of the two institutitions also indicated that they had a program to enhance women in non-traditional jobs, but had no data to evaluate the program. A similar request to the CAREER COLLEGE ASSOCIATION (for vocational education) was similarly unable to elicit a response (or even the receipt SAS-post-card). Again, evidence, circumstantial that it is, emerges that "tactics" have superceded "analysis".

APPENDIX I.

Percentage of high school graduates pursuing postsecondary education who entered two-year institutions immediately after high school (1972) (U.S. Dept. of Education 1989a)

Student characteristic	Percentage of subgroup:
Total	39%
Gender	
Male	37%
Female	42%
Ethnicity	
Black	23%
Hispanic	21%
White	42%
Parents' education	
Some high school	37%
High school	40%
Some college	39%
BA or higher	42%
Socioeconomic Status (SES)	
Low	38%
Medium	40%
High	40%

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